

**EXHIBIT %**

**UNITED STATES DISTRICT COURT  
NORTHERN DISTRICT OF CALIFORNIA  
SAN FRANCISCO DIVISION**

HUAWEI TECHNOLOGIES, CO., LTD. et al.,

Plaintiffs,

v.

SAMSUNG ELECTRONICS CO. LTD., et al.,

Defendants.

Case No. 16-cv-02787-WHO

---

SAMSUNG ELECTRONICS CO., LTD, &  
SAMSUNG ELECTRONICS AMERICA, INC.

Counterclaim-Plaintiffs,

v.

HUAWEI TECHNOLOGIES, CO., LTD,  
HUAWEI DEVICE USA, INC., HUAWI  
TECHNOLOGIES USA, INC., & HISILICON  
TECHNOLOGIES CO., LTD.,

Counterclaim-Defendants.

---

**EXPERT REPORT OF MICHAEL A.M. DAVIES  
April 27, 2018**

## Table of Contents

<b>I.</b>	<b>BACKGROUND AND QUALIFICATIONS .....</b>	<b>1</b>
<b>II.</b>	<b>STATUS AS INDEPENDENT EXPERT .....</b>	<b>6</b>
<b>III.</b>	<b>ON THE NATURE OF STANDARD ESSENTIAL PATENTS AND ANTITRUST..</b>	<b>7</b>
<b>IV.</b>	<b>LEVEL OF ORDINARY SKILL IN THE ART .....</b>	<b>9</b>
<b>V.</b>	<b>AVAILABLE NON-INFRINGEMENT ALTERNATIVES .....</b>	<b>10</b>
A.	U.S. Patent Application Publication No. 2013/0028192 A1 .....	10
1.	Summary of the ‘192 Patent Application .....	10
2.	Key Elements of the ‘192 Patent Application .....	14
3.	Person of Ordinary Skill in the Art (POSITA) Alternatives .....	14
4.	Patent Alternatives.....	17
B.	U.S. Patent Application Publication No. 2009/0303956 A1 .....	20
1.	Summary of the ‘956 Patent Application .....	20
2.	Key Elements of the ‘956 Patent Application .....	21
3.	Person of Ordinary Skill in the Art (POSITA) alternatives.....	23
4.	Patent Alternatives.....	26
C.	Chinese Patent No. CN100571106C.....	29
1.	Summary of the CN100571106C Patent .....	29
2.	Key Elements of the CN100571106C Patent .....	32
3.	Person of Ordinary Skill in the Art (POSITA) alternatives.....	34
<b>VI.</b>	<b>TECHNICAL SIMILARITIES BETWEEN THE UNWIRED PLANET AND SAMSUNG PATENTS .....</b>	<b>35</b>

10. More recently, my work in this area has focused on the rapid adoption and broader economic and social impact of smartphones, including what is driving this adoption; the key factors that determine consumers' choices and behavior; on products, portfolio and pipeline, and on the broader implications throughout this ecosystem and the economy as a whole over the next three-to-five years. Additionally, my recent work has focused on the underlying technology and supply chain of smartphones and tablets.

11. I have significant experience serving as an expert consultant in this field. I served as an industry expert for the Department of Justice in 2011 in the anti-trust investigation of the proposed AT&T and T-Mobile merger. In this role, I analyzed the impact of the proposed merger, in particular as it related to consumer choice and to the technology and the economics of mobile networks and mobile services.

12. I have served as an expert witness in recent International Trade Commission investigations including ITC Investigation Nos. 337-TA-796, 337-TA-862, 337-TA-866, 337-TA-868, 337-TA-925, 337-TA-932, 337-TA-952, 337-TA-982, 337-TA-1004/990, 337-TA-1023, 337-TA-1026, and 337-TA-1053, all of which are related to the information and communications technology industry and public interest matters. I have significant experience in academia. I am a Senior Lecturer at the Massachusetts Institute of Technology (MIT) where I currently teach the business and engineering portions of the Integrated Design and Management program and have been responsible for creating, managing, and teaching two capstone leadership courses for postgraduate students, the Systems Leadership & Management Lab and Praxis programs, and for teaching the capstone leadership courses for undergraduates in the Gordon

Engineering Leadership program.<sup>1</sup> I am also a Principal Investigator at MIT and supervise the Master's thesis work of several students each year, much of which also focuses on issues related to mobile and digital ecosystems and innovation. I also have supervised theses that have been spun off as companies and received funding from the National Science Foundation.

13. I am responsible for organizing and teaching the New Technology Ventures program at London Business School, which is designed to enable would-be entrepreneurs to evaluate novel ideas and technologies, many of them in the mobile and digital industries, and turn them into new technology ventures. A primary focus of this course in particular is the economics of technological innovation, of new product introduction, and of entrepreneurial ventures.

14. I have held significant leadership roles in the industry. I was the New Zealand representative to the International Telecommunication Union Radiocommunication Sector (ITU-R), the international standards making body, including the ITU-R, Task Group 8/1. I was elected as a Vice-Chairman of the Global System for Mobile Communication Memorandum of Understanding (the largest group of mobile network operators worldwide, which is now the GSMA with nearly 800 members) and was a founder and Chairman of its 3rd Generation Interest Group, and have also chaired government working parties on PCS Spectrum.

15. I am the Chairman of the Massachusetts Technology Leadership Council Mobile Cluster, and I am on the Board of Advisors for the Department of Systems Engineering at the U.S. Military Academy at West Point, on the Board of Directors of the Kendall Square Association, and am an advisor to WGBH. I am a member of the Executive Committee of the

---

<sup>1</sup> Integrated Design & Management (IDM), MIT. (2017), <http://idm.mit.edu/about/faculty/>, (Last visited 2017.05.22), SS-ITC-AN-00125398.

20. I am being compensated at the rate of \$800 per hour for my work. My fee is not contingent on the outcome of any matter or on any of the technical positions explained or set forth in this declaration. In preparing my report, I have considered the information cited herein and in Exhibit 2, along with other publicly available materials that I have reviewed.

### **III. ON THE NATURE OF STANDARD ESSENTIAL PATENTS AND ANTITRUST**

21. I have been asked to examine several patents and to determine whether or not there were technically feasible alternatives that could have been chosen as the basis for the relevant standard. I have reviewed each of these patents, identified the key mechanisms of concern, and I have considered whether a person of ordinary skill in the art could have readily identified alternative approaches that met the same requirements. I have also looked at other relevant prior art from the related fields, in particular wireless communications, with which a person of ordinary skill would have been familiar, and wherein when confronted with analogous problems alternative approaches have been implemented. I have reviewed, where available, LTE patents describing alternative approaches that were proposed by other parties for the LTE standard.

22. Organizations within an industry may cooperate to create a standard. As part of participating in the standards-making process, each of these organizations makes a commitment that any patents which are essential to the standard, so called standard essential patents (SEPs), shall be licensed to other entities on a fair, reasonable, and non-discriminatory (FRAND) basis.

23. As these organizations work on developing and implementing the standard, any individual member organization of the standards body may file patents. If a member believes, and wishes to assert, that the invention(s) described in one of their patents must be used in order to properly implement the standard, it declares the patent to be standard essential with respect to

that particular standard. The standards body keeps a record of every patent that is declared by each of its constituent members to be standard essential.

24. There are several reasons why a patent that is declared to be standard essential may be found to be non-essential. For instance, it may be found upon thorough review that a patent which has been declared an SEP is only applicable to some implementations or embodiments of the standard. For example, if one of a company's patents deals with TDD mode, but TDD mode is only one of a plurality of possible implementation options within the standard, the patent would be found to be non-essential due to the fact that the standard may be successfully implemented without using the patent at all (e.g. perhaps the standard also supports FDD mode).

25. Generally, the value that a company is entitled to recover for an SEP is equal to the value that the patent held prior to it becoming incorporated into the standard. The reason for this is simple. It is generally understood that in many cases there are a number of feasible alternative ways of satisfying the requirements of the standard. Each of these alternatives has the same value prior to the selection of one to be adopted into the standard. Once the selected patent has been incorporated into the standard, anyone using the patent in implementing the standard must pay royalties for it on a Fair, Reasonable, and Non-Discriminatory ("FRAND") basis. At this point, the value of that particular patent is much higher than the value of the patents or inventions that were not selected for adoption into the standard.

26. A key difference arises when there is objectively only one feasible way of satisfying the requirements of the standard. In this case, the patent would be called "fundamental," as there are no acceptable alternative implementations. For example, the only way to meet the design requirements for LTE with low latency, high bandwidth, and high coding

efficiency is to use orthogonal frequency-division multiplexing (OFDM). Other schemes like code-division multiple access (CDMA) cannot be used, for reasons including some issues related to mobility management.

27. Such considerations related to essentiality and standardization need to be factored into any antitrust position. If a patent holder holds patents of the type where there were a number of credible alternative implementations prior to a single implementation being selected for incorporation into the standard, the patent holder would be in violation of antitrust regulations by asking for an injunction. While the holder asserts that their patent is standard essential, in reality it was perhaps arbitrarily selected from a pool of other equally feasible and applicable implementations. In this case, the patent holder's behavior is also inconsistent with the commitments they have made with the standards body. A holder should not be granted an injunction on a patent ex-post if the patent was only one of a number of equally plausible alternatives ex-ante.

#### **IV. LEVEL OF ORDINARY SKILL IN THE ART**

28. I have been told by counsel that "a person of ordinary skill in the art" ("POSITA") is a hypothetical person to whom an expert in the relevant field could assign a routine task with reasonable confidence that the task would be successfully carried out. I have been informed that the level of skill in the art is evidenced by the prior art references.

29. I am informed, and it is consistent with my review, that the earliest priority date for the '192 Patent Application is its April 7, 2010 priority date. The prior art discussed herein demonstrates that, at the time the '192 Patent Application was filed, a person of ordinary skill in the art would have had at least a bachelor's degree in electrical engineering, computer engineering, or computer science, with at least two to three years of experience in



April 27, 2018

Date

A handwritten signature in blue ink, appearing to read "Michael A.M. Davies", written in a cursive style.

MICHAEL A.M. DAVIES

# **EXHIBIT 1**

**MICHAEL A.M. DAVIES**

Senior Partner and Chairman | Endeavour Partners | michael@endeavourpartners.net

Founder | Silverthread Inc. | michael@silverthreadinc.com

Senior Lecturer | Massachusetts Institute of Technology | mamd@mit.edu

Guest Lecturer | London Business School | mdavies@london.edu

Michael Davies has worked for nearly thirty years in the telecommunications and related industries with a particular focus on innovation in mobile devices, communications services and network infrastructure. His expertise spans the design, development and deployment of mechanical, electrical, electronic and high tech products; manufacturing; software coding; video; supply chain management; research and development; technology; and strategy.

As the Senior Partner and Chairman of Endeavour Partners, Michael:

- leads a firm specializing in the connections between technology, innovation, product development, consumer choice and behavior, the adoption and diffusion of new products, intellectual property, and the emergence and evolution of mobile and digital ecosystems
- provides consulting services to companies throughout the mobile industry, including cellular infrastructure providers, mobile device manufacturers, and mobile network operators, as well as traditional companies that are being impacted by technology
- provides expert witness testimony on matters related to intellectual property and public policy within the mobile and digital industries

As Founder of Silverthread Inc., Michael:

- leads a company that helps clients diagnose and improve the design architecture of large software systems to improve predictability of project schedules, reduce unnecessary overhead costs, and prevent compounding complexity

As a Senior Lecturer at MIT, Michael:

- created and teaches courses in fundamental and advanced topics in integrated design and product development process
- teaches topics including innovation, emerging technologies, product management, product marketing, basic finance and business models, pricing and marketing, competitive analysis, market opportunity identification, funding entrepreneurship, business plan & pitch, and data-driven decision making

As a Guest Lecturer at the London Business School, Michael:

- manages and teaches the New Technology Ventures Program, which enables would-be entrepreneurs to evaluate novel ideas and inventions and turn them into new technology ventures

**EDUCATION**

LONDON BUSINESS SCHOOL	1989-1991
MBA ( <i>WITH DISTINCTION</i> )	
Business Strategy, Technology Management And Decision Sciences	
Participation In the PhD Program On Systems Dynamics	
Post-graduate study in Systems Thinking	
UNIVERSITY OF DURHAM, UK	1982-1984
MASTER OF ENGINEERING	
Microelectronics	
Cybernetics And Robotics	
Management Science	
ST CATHARINE'S COLLEGE, UNIVERSITY OF CAMBRIDGE	1979-1982
MASTER OF ARTS	
Electrical Sciences Tripos (Computer Science, Mathematics, Engineering and Physics)	
Engineering Part I And Part II	
HARVARD BUSINESS SCHOOL	
Post-graduate study in Innovation & Organizations	

**SPECIALIST EXPERTISE**

Michael Davies' expertise covers the spectrum of strategic challenges that the leaders of technology businesses must work to confront:

- anticipating the future – developing insight into the co-evolution of the demand opportunity, business ecosystem and technical infrastructure, with a particular focus on quantifying demand and determining consumers' purchase preferences and buying behavior
- developing robust strategies – identifying opportunities and options, for initiatives, investments and business models to create and to capture value
- executing effectively – aligning activities with emerging opportunities, as well as adapting for new and different episodes in the co-evolution of the enterprise and its environment

He has several areas of specialist expertise relevant to these challenges:

- the economics of communication networks, in particular shared infrastructure, wireless, broadband and packet networks (LTE base stations)
- the economics of hardware electronic systems, in particular semiconductor and hardware manufacturing, modern computing systems, and consumer electronics
- creative business models, co-opetition and building business ecosystems, including open innovation, open source and other innovative approaches
- the economics of innovation, standards and intellectual property (trade secrets, patents and licensing strategies), and in particular how to create and capture value from technological innovation, or commoditize others' IP to protect value
- the economics of systems, platforms, architecture and modularity, in particular as this relates to complex products and services that combine software and computers

- consumer behavior and segmentation, for high-tech products such as consumer electronics
- strategy and management for R&D, product creation and technological innovation
- how management and knowledge-intensive technical teams, such as R&D people, work together

His R&D experiences, particularly in the design of hardware and systems, include:

- Member of Motorola's R&D Advisory Board
- Member of Telecom New Zealand's R&D Board
- Initial development team member of the Nokia Communicator (while at BellSouth New Zealand)
- Principal Investigator for a National Science Foundation funded research program for MIT
- Senior Lecturer in MIT's Integrated Design and Management program with appointment in the Institute for Data, Systems, and Society

#### **EXPERT REPORTS AND TESTIMONY EXPERIENCE**

- United States of America et al. v. AT&T Inc. et al.
  - Department of Justice, anti-trust investigation, Civil Action No. 11-01560 (ESH)
  - Expert Report (2011)
- Apple v. Samsung Electronics America, Inc., Samsung Telecommunications America LLC, and Samsung Electronics Co., Ltd.
  - International Trade Commission investigation No. 337-TA-796
  - Expert Declaration (2013)
- Ericsson Inc. and Telefonaktiebolaget LM Ericsson v. Samsung Electronics America, Inc., Samsung Telecommunications America LLC, and Samsung Electronics Co., Ltd.
  - International Trade Commission investigation No. 337-TA-862
  - Expert Report, Rebuttal Expert Report, Expert Witness Statement, Deposition Testimony, Trial Testimony (all 2013)
- Samsung Electronics Co., Ltd. and Samsung Telecommunications America, LLC v. Ericsson Inc. and Telefonaktiebolaget LM Ericsson
  - International Trade Commission investigation No. 337-TA-866
  - Expert Report, Rebuttal Expert Report, Deposition Testimony, Trial Testimony (all 2013)
- InterDigital Communications, Inc., InterDigital Technology Corporation, IPR Licensing, Inc. and InterDigital Holdings v. Samsung Electronics America, Inc. and Samsung Telecom America, LLC
  - International Trade Commission investigation No. 337-TA-868
  - Expert Report, Rebuttal Expert Report, Deposition Testimony, Expert Witness Statement, Trial Testimony (2013-2014)
- Sasken Communication Technologies Limited v. Spreadtrum Communications, Inc. and Spreadtrum Communications USA
  - American Arbitration Association, International Centre for Dispute Resolution No. 50-117-T-00924-12
  - Expert Report, Trial Testimony (2013-2014)
- On Track Innovations LTD v. T-Mobile USA, Inc.
  - United States District Court, Southern District of New York No. 12-cv.02224-AJN-JCF
  - Expert Report, Deposition Testimony (2013-2014)
- Enterprise Systems Technologies v. Samsung Electronics America, Inc., Samsung Electronics Co. Ltd. and Samsung Telecommunications America, LLC
  - International Trade Commission investigation No. 337-TA-925
  - Expert Report, Deposition Testimony (2015)

- NVIDIA Corporation v. Samsung Electronics America, Inc., Samsung Electronics Co. Ltd. and Samsung Telecommunications America, LLC
  - International Trade Commission investigation No. 337-TA-932
  - Expert Report, Deposition Testimony, Trial Testimony (2015)
- Nokia Corporation v. Samsung Electronics Co., LTD
  - Arbitration, International Chamber of Commerce No. 19602/AGF/RD (c.19638/AGF)
  - Expert Report, Trial Testimony (2015)
- Ericsson Inc. and Telefonaktiebolaget LM Ericsson v. Apple, Inc.
  - International Trade Commission investigation No. 337-TA-952
  - Expert Report, Deposition Testimony, Trial Testimony (2015)
- Core Wireless Licensing S.A.R.L. v. LG Electronics, Inc., and LG Electronics Mobilecomm U.S.A., Inc.
  - United States District Court, Eastern District of Texas No. 2-14-cv-00911-JRG-RSP
  - Expert Declaration, Expert Report, Deposition Testimony (2015)
- ParkerVision Inc. v. Apple Inc., Samsung Electronics Co., Ltd and Samsung Electronics, Inc., LG Electronics, Inc., and LG Electronics Mobilecomm U.S.A., Inc., and Qualcomm Inc.
  - International Trade Commission Investigation No. 337-TA-982
  - Expert Report, Deposition Testimony (2016)
- T-Mobile U.S.A., Inc. v. Huawei Device U.S.A., Inc., and Huawei Technologies Co Ltd.
  - United States District Court, Western District of Washington No. 14-cv-01351-RAJ
  - Expert Report, Declaration, Deposition Testimony (2016), Declarations, Trial Testimony (2017)
- Immersion Corporation v. Apple Inc., and AT&T Mobility LLC.
  - International Trade Commission Investigation No. 337-TA-1004/990
  - Expert Report (2016), Deposition Testimony, Trial Testimony (2017)
- Netlist, Inc. v. SK hynix America Inc., SK hynix Inc., SK hynix memory solutions Inc.
  - International Trade Commission Investigation No. 337-TA-1023
  - Expert Report, Deposition Testimony, Trial Testimony (2017)
- Andrea Electronics Corporation v. Samsung Electronics America, Inc., Samsung Electronics Co., LTD
  - International Trade Commission Investigation No. 337-TA-1026
  - Expert Report, Deposition Testimony (2017)
- Motorola Solutions, Inc. v. Hytera America, Inc., and Hytera Communications America (West), Inc.
  - International Trade Commission Investigation No. 337-TA-1053
  - Expert Report (2017)

## PROFESSIONAL EXPERIENCE

Endeavour Partners

**Founder and Chairman**

**2003 – Present**

Endeavour Partners is a technology strategy consulting firm that works with the top management teams of leading businesses throughout the high-tech, mobile and digital business ecosystems, to drive growth and innovation, and to build team capabilities. The firm is headquartered in Cambridge, MA, with an office in London, United Kingdom.

### Technical Experience

Michael and his team have experience working throughout the digital ecosystem, across mobile, Internet and digital convergence and commerce. This includes extensive work on communications, in particular mobile devices (feature phones, smartphones, tablets, cameras, connected home, home automation), services (video/PnP, data, messaging, mobile payment, barcode, Bluetooth), components (codecs, sensors) and networks (network infrastructure and equipment), broadband and internet, computing (from semiconductors through personal computing to software services),

consumer electronics, content (video, audio, gaming), commerce and the convergence of these domains. The firm specializes in technological innovation, the adoption and diffusion of new products, and the emergence and evolution of business ecosystems from a systems point of view.

### **Clients**

Leading network operators and service providers, including Verizon Wireless, AT&T, Sprint, T-Mobile, Vodafone, and BT and network infrastructure providers such as Crown Castle, Samsung and Lucent, and most of the leading mobile device/connected home OEMs, including HTC, Samsung, Apple, Nokia, LG, Sony Ericsson, and Motorola. His work also includes standards work for the GSMA, the leading network operator association. Most recently, his work in this area has been focused on the rapid shift toward smartphones, what is driving this shift, and what will be the key market winning criteria over the next 3-5 years.

### **Recent Work (IP and strategy work)**

Corporate strategy, business strategy, technology strategy and product creation including:

- being the technical expert for the Department of Justice on the anti-trust case of the proposed AT&T and T-Mobile merger in 2011. Conducted, with his team, extensive analysis of the potential impact of the merger on competition, overall consumer welfare and in particular the network economics. This included an evaluation of the future evolution of wireless infrastructure, and the resulting costs and economics, over the medium term, under a range of different scenarios.
- being a technical and industry expert on Standard Essential Patents (SEPs) on mobile connectivity and related mobile services for an IP arbitration case
- being a technical expert on a patent case related to the capture and decoding of real-time video signals and communication on smartphones
- being a technical expert on various wireless standard creation, including prior art and invalidity expert for the leading wireless network operator association
- being a technical expert in the area of audio codecs for a leading mobile device manufacturer
- being an expert on a number of ITC cases involving wireless infrastructure/network, mobile devices/connected home devices, software applications and ecosystems
- developing strategies for wireless carriers on video/PnP, 4G and LTE technologies, Bluetooth and data/messaging, particularly around innovative business models
- being an expert on contract disputes involving computer software and licensing
- developing the video and media platform strategy for one of the world's largest and most successful network operators and service providers
- developing strategies on Internet and mobile advertising for various services providers, including market sizing, opportunity assessment and business model deployment
- developing strategies on connected home products and connectivity standards within the home
- driving strategies in NFC technology and mobile payments for a major wireless carrier, including a deep technical analysis of competing solutions, as well as assessment on the surrounding business ecosystem, viable business models and drivers and consumer adoption patterns
- developing a comprehensive projection of the medium and long-term demand for all digital services and devices, and the related attributes driving consumer choice and preference,

including projected market share for major players under a variety of alternative scenarios, and the strategic implications

- driving strategies on software innovation and content management for the world's largest information technology provider
- providing external stimulus and challenge to the top management team on the renewal of product creation for one of the world's largest, most complex and fastest-changing R&D organizations, which was one of the world's largest software development organizations) with ~20,000 people in R&D
- developing an "R&D University" with the world's top academics for the top management team of the #1 mobile device vendor
- mapping the future of the consumer electronics and connected home devices, computing and communications business ecosystem for the world's #1 consumer electronics business
- driving the renewal of technology management for a multi-billion dollar broad scope global technology business, with activities from semiconductors through software platforms to devices and complete solutions
- support for corporate and business strategy for top-tier service providers and network operators (such as BT and Deutsche Telekom), for software businesses, innovative start-ups and infrastructure vendors.

Silverthread, Inc.

**Founder**

**2013-present**

Silverthread's services and tools help clients diagnose and improve the design architecture of large software systems to improve predictability of project schedules, reduce unnecessary overhead costs, and prevent compounding complexity. Silverthread's clients include large corporations and government entities that own and manage large, complex software systems.

EquuSys

**Chief Technology Officer**

**2004-present**

Led development of the company's patented solution, including the development of a hardware electronics sensor product and the accompanying software. EquuSys is a telemetry and informatics company that provides real-time real-world data to enhance the evaluation, diagnosis, rehabilitation, training and conditioning of elite horses.

Mercator Partners

**Founder and Chairman Emeritus**

**1998 – 2009**

Thought leader for the firm; designed, directed and delivered all training programs in strategy and technology. Its alumni have gone on to top strategy roles with a number of industry leading firms, including Google, HTC, Nielsen, Yahoo!, Sony Ericsson, HTC and Vodafone. His work with clients focused on how to build creative new business models and develop effective business strategies, including:

- for the leading US mobile company, work on building business ecosystems, on challenging its business strategies, and on understanding customers and their likely behavior
- for a major global JV with European and Japanese parents, understanding emerging applications and potential business models



- for the most successful MVNO in the world, a range of work including strategies for data services, market entry and partnership development
- for several high-tech R&D-intensive businesses across consumer electronics, telecommunications, automotive and aerospace, looking at how to commercialize highly-innovative technologies
- for the #1 US communications infrastructure company, work on customer needs, and on its strategy for 3G mobile
- for a leading Japanese consumer electronics and industrial conglomerate, a wide range of work on the evolution of consumer electronics, on monetizing its semiconductor intellectual property, on consumer segmentation, on creative business models and on product portfolios, pipeline and positioning
- work with a variety of media companies on business models and content plays in the Internet and mobile service space
- for a leading European mobile operator, developing novel values- and lifestage-based consumer segmentations that enabled it to increase customer loyalty and reduce its costs
- for UK 3G auctions, assembling a consortium bid (SpectrumCo), and raising >\$4 billion for an innovative business model, with players such as Virgin, Sonera, Nextel, and Tesco
- for several broadband and IP players, developing business models and market entry strategies
- for several top-tier private equity players, (such as The Carlyle Group, Providence Equity, Kohlberg Kravis Roberts, Blackstone and Berkshire Partners) due diligence and strategic counsel on technology and telecoms investments.

#### GeoPartners Research

##### **Principal**

**1996-1998**

Technology evaluation and strategy focused on broadband, IP and next generation wireless technologies:

- for AT&T, overall corporate strategy, including IP, VoIP, local entry, wireless and broadband, including network infrastructure and equipment (including NAT and DNS for VoIP)
- for Qualcomm, evaluating new technologies, business ventures, and organizational design
- for HP, Northern Telecom (subsequently Nortel Networks) and Intel, work on business models and building business ecosystems

#### BellSouth International

##### **Chief of Strategy, BellSouth NZ (now Vodafone NZ)**

**1993-1996**

Corporate and business strategy, government relations and industry relations, and R&D, including:

- pioneered the first PDA with digital cellular connectivity (Apple Newton, Nokia Data Card and Nokia 2110) and collaborated with Nokia on the development and testing of the very first modern smartphone, the Nokia Communicator
- elected as a Vice-Chairman of the GSM MoU (later became the GSMA); founder and chairman of its 3<sup>rd</sup> Generation Interest Group; chaired Government working parties on PCS Spectrum
- built the business from pre-launch through to profitability, which has now become the clear market leader and Vodafone's most successful business worldwide

- designed and drove a path-breaking multi-million dollar global academic research program on the economics of communications, networks and technologies in deregulated markets, whose participants included: Jean-Jacques Laffont; Jean Tirole; Paul David; David Teece; David Gabel; and Glenn Woroch

Boston Consulting Group

**Manager**

**1991-1993**

Focused on technology and telecoms businesses, including Philips Electronics, Telecom NZ, Telstra and in particular BellSouth International. Responsible for training programs in advanced analytical techniques for strategy development.

Braxton Associates

**Manager**

**1987-1991**

Worked on a wide range of strategy projects, focusing on electronics and defense businesses in particular, and on corporate strategy, product development, manufacturing and operational transformation, and market entry. Played a leading role in development and training, focusing in particular on approaches to organizational transformation.

Mars Electronics

**Engineer**

**1984-1987**

Worked as roboticist, cyberneticist and designer, developer and program manager for large scale real-time systems for manufacturing and logistics. Involved in the development of overall business strategy.

Cookson Group

**Engineer**

**1982-1984**

Worked as a robotics engineer and automation manager overseeing and supporting many existing robotic handling and other automation systems. Designed, developed, and deployed additional state of the art robotic and automation systems for manufacturing processes and material handling.

## TEACHING EXPERIENCE

### MASSACHUSETTS INSTITUTE OF TECHNOLOGY

**Senior Lecturer – Integrated Design and Management**

Invited to create and teach as part of Integrated Design Lab I and Integrated Design Lab II (EM.441 and EM.442), courses that present fundamentals of and advanced topics in integrated design and product development process.

Developed and taught fundamental concepts including innovation, emerging technologies, product management, product marketing, basic finance and business models, and pricing and marketing. developed taught advanced topics including competitive analysis and market opportunity identification, funding entrepreneurship, business plan & pitch, and data-driven decision making.

**Senior Lecturer – Engineering Systems Division (now Institute for Data, Systems, and Society)**

Responsible for creating, managing and teaching two capstone leadership courses, the Systems Leadership & Management Lab (ESD.39) and Praxis (ESD.S51).

SL&M Lab is a semester-long course in which SDM Fellows work an average of at least one full day per week (~fifteen person-days) with the top management of a high-tech business on a relevant real-world systems and management challenge. The host companies set the project focus; that is project teams work on the problems that are of real concern to the host companies.

The course also includes an intense focus on how to work effectively with these types challenges, including team roles, logical thinking and writing, and the use of graphical communication.

Assignments can range from a high-level systems thinking issue, through to building a prototype. SDM

students take this experience with them as they work with their sponsoring companies or continue in their career progression and development.

The SL&M Praxis course is about *praxis, practice, as distinguished from theory; application or use, as of knowledge or skills*. The course gives SDM Fellows insights into the realities of decision-making and managerial behavior in large, complex high-tech and systems businesses. It provides them with a systematic approach and the practical skills needed for the application of their rich and deep learning and frameworks about systems, architecture, technology and strategy to real-world leadership and management challenges. It runs during the summer session as a complement to and preparation for the SL&M Lab course.

**Senior Lecturer – Bernard M. Gordon-MIT Engineering Leadership Program, School of Engineering**

Taught the capstone undergraduate leadership course, Engineering Leadership (ESD.045), and Technology & Strategy (15.905/15.965).

The Bernard M. Gordon-MIT Engineering Leadership Program (<http://web.mit.edu/gordonelep/>) fosters new approaches that prepare the nation's young engineering leaders for productive and effective careers in engineering companies and continues MIT's rich, innovative tradition of engineering leadership. The Engineering Leadership course exposes students to the models and methods of engineering leadership within the contexts of conceiving, designing, implementing and operating products, processes and systems.

The Technology & Strategy course provides a strategic framework for managing high-technology businesses. Its emphasis is on the development and application of ways of thinking or mental models that bring clarity to the complex co-evolution of technological innovation, the demand opportunity, business ecosystems, and decision-making and execution within the business.

These tools provide managers with insights when anticipating and deciding how to respond to the behavior of competitors, complementors, and customers, and when deciding which technologies to invest in, opportunities to target or partnerships to pursue.

**Principal Investigator – Engineering Systems Division (now Institute for Data, Systems, and Society)**

Involved in the research on the improvement of software project outcomes by attacking complexity and technical debt as part of a National Science Foundation (NSF) I-Corps program.

**Researcher and Thesis Advisor**

Supervises thesis work on related areas, including recent prize-winning work on the future of the smart grid, and theses on a broad range of issues.

Conducts research on how psychology shapes consumers' buying behavior and how product features and specifications influence consumers' choices among products and their liking for products. This culminated in a keynote presentation at MIT in Europe, held in Vienna, Austria.

**LONDON BUSINESS SCHOOL**

**New Technologies Ventures Program**

Manages and teaches this unique program that brings together MBAs and business students from London Business School with post-doctoral researchers from University College London.

The goal of this course is to enable would-be entrepreneurs to evaluate novel ideas and inventions and turn them into new technology ventures. Participants, who are business professionals, scientists, engineers and would-be entrepreneurs, explore how entrepreneurs and investors identify and analyze the feasibility of innovative technical ideas, turn them into products and services, and take these products and

services to market, in both start-ups and established businesses. A key element of the program is projecting demand for innovative products and new product features.

### **PROFESSIONAL AFFILIATIONS**

Recognized as a World Class New Zealander (March 2007)

Appointed to U.S. Beachhead Board of New Zealand Trade & Enterprise (NZTE) (July 2006)

Member, Board of Directors, Massachusetts Technology Leadership Council (MassTLC)

Co-Chairman, Mobile Cluster, Massachusetts Technology Leadership Council (MassTLC)

Member, Board of Advisors, Department of Systems Engineering at the United States Military Academy at West Point

Member, Executive Committee, Boston Area Chapter of the Communications Society of the Institute of Electrical and Electronic Engineers (IEEE)

Member, Association for Computing Machinery (ACM)

Member, Academy of Management

Member, Strategic Management Society

Member, INFORMS

Member, Product Development Management Association (PDMA)

Leader, London Business School alumni in North America

Founder and President, Kiwi Expatriates Association (KEA) in New England

Member, Board of the Kendall Square Association